DOCUMENT RESUME

ED 036 991 EF 000 616

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TITLE	A Brief Study of Cafeteria Facilities and Operations, with Recommendations for Implementation.
INSTITUTION	Educational Facilities Labs., Inc., New York, N.Y.
PUB DATE	61
NOTE	25p.
EDRS PRICE	EDRS Price MF-$0.25 HC-$1.35
DESCRIPTORS	*Dining Facilities, Food, *Food Handling Facilities, *Food Service, *Lunch Programs, Physical Facilities

ABSTRACT

The facilities and operations of the school lunch program in the public schools of Hawaii are reviewed. Several types of school lunch programs are described including--(1) traditional school lunch programs, (2) kitchen and classroom dining, (3) central and decentralized dining, (4) home school-feeder school system, (5) central kitchen, and (6) the Waiakea plan. Consideration is then given to the problem of food poisoning, the portable electric food cart, and trends in school lunch programs. A list of recommendations is presented along with a suggested modernization program for six Kaliki schools. (FS)

ED036991

A BRIEF STUDY OF CAFETERIA FACILITIES AND OPERATIONS, WITH RECOMMENDATIONS FOR IMPLEMENTATION.

Submitted to:

MR. WALTON M. GORDON
SUPERINTENDENT OF PUBLIC INSTRUCTION
DEPARTMENT OF EDUCATION

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EF 000 616

AN EDUCATIONAL FACILITIES LABORATORIES PROJECT

Prepared by:

James T. Okamura, Director
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Honolulu, Hawaii, U.S.A. 1961

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FACILITY FOR THE SCHOOL LUNCH PROGRAM

The school lunch program in the public schools of Hawaii has made commendable progress since its establishment in 1912. Today, 99% of our schools offer a lunch program to our boys and girls.

The school cafeteria has come a long way, too. It is an integral part of the total school complex. It has become a priority item in the planning of the modern school, likewise in the modernization program of old schools.

The various types of cafeteria facilities we have here in Hawaii and on the mainland are presented for orientation purposes. Briefly, the different plans are:

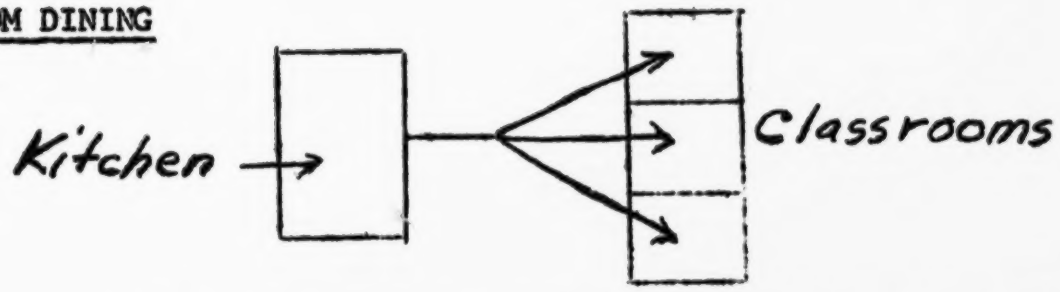
TRADITIONAL

The traditional plan of a cafeteria was the location of the kitchen next to the dining room. This was done to expedite the serving of hot food to the students. Almost all of our schools in the state of Hawaii have this type of facility.

Certain improvements have been made in the basic plan over the years, such as building a corridor between the kitchen and the dining room to minimize the noise and odor problems which interfered with the multi-purpose use of the dining room, however, the basic concept remains the same.

This type of facility is still a good solution to the feeding problem.

KITCHEN & CLASSROOM DINING



Classroom dining became a necessity in some of our schools in Hawaii due to limited space in the main dining room or no dining space at all in schools which were being built under the increment plan. This system has had considerable success in the elementary schools because it was a natural extension of the "self-contained" classroom.

Food was taken to the classroom and served there or the youngster went to the kitchen to get his food and returned with it to dine in his room under teacher supervision. Classroom teachers claim there are several advantages to this system. They are:

1. Children dine quietly in the relaxed atmosphere of their own classrooms.

2. Teachers can use the period better to teach good nutrition.

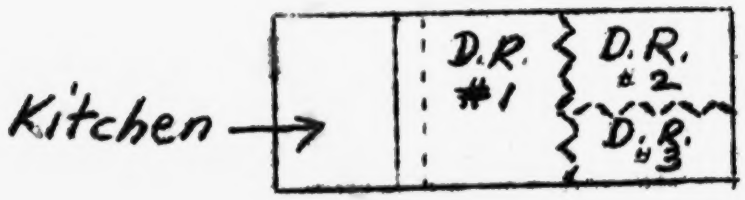
3. Teachers and children can discuss and practice proper health and table manners better than in the large dining room.

4. Children tend to eat more slowly and eat more food.

Several schools, mainly by necessity, still operate their school lunch program by this system. The Preparatory Department (K-4) of Kamehameha Schools has used this system for several years.

This type of plan (Classroom Dining) emphasizes the need of the multi-purpose room. Such a building is now under construction at Ewa Beach Elementary School.

CENTRAL DINING

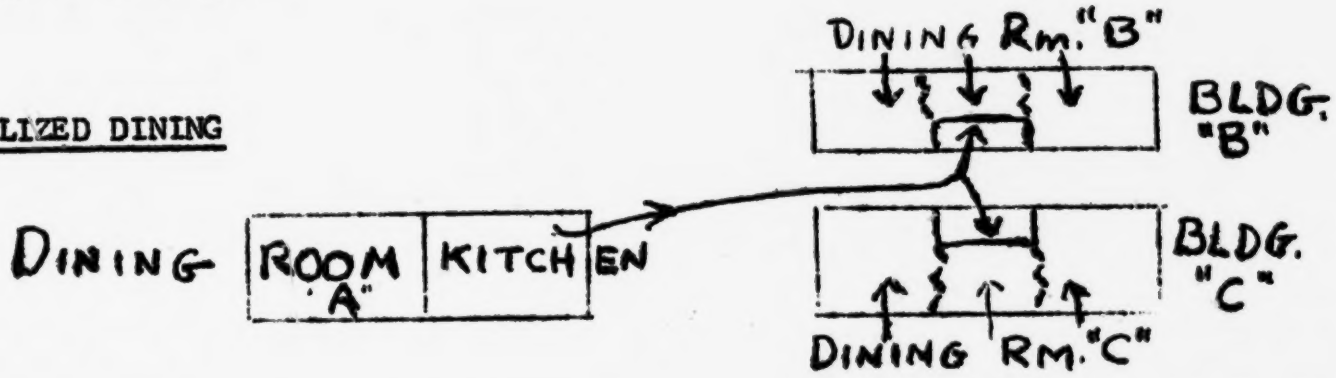


This plan is a variation of the traditional cafeteria discussed in a previous paragraph. The attempt in this type of facility is to reduce the large mass of diners into smaller groups, either on grade basis, interest groups or by some other designation.

The dining areas are still next door to the kitchen, but a variety of areas are created by movable partitions and portable screens. Sometimes permanent partitions create small enclosed dining rooms.

A plan of this type is in operation at the Laboratory School, University of Chicago.

DECENTRALIZED DINING

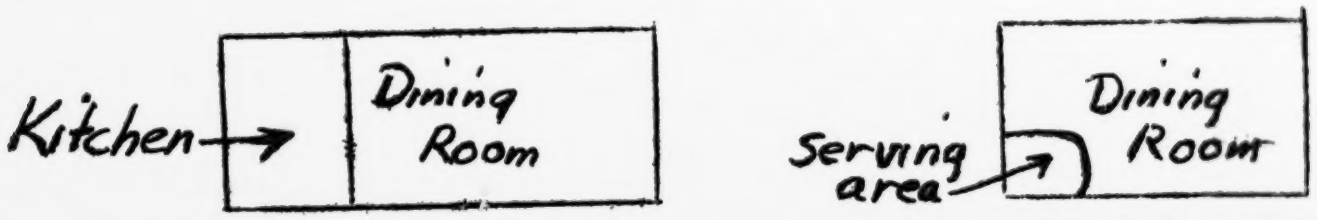


Under this concept, the total dining area needed in a large school is divided into several smaller spaces and are placed in strategic locations in different buildings throughout the school. Food is taken to the decentralized dining areas by the use of electric hot and cold food carts.

Such a program is in operation at North Hagerstown High School in Washington County, Hagerstown, Maryland. Each main building has its own

dining and assembly space. The area can be used as one large dining room or by the use of folding, sound-resistant partitions be made into three smaller rooms. The students do not have to crowd into a single large dining room, thereby eliminating the usual confusion of crowdedness and noise.

"HOME SCHOOL - FEEDER SCHOOL" SYSTEM *



In this system, one school serves as the "home school" whose manager is directly responsible for the entire lunch program of her own school and her subsidiaries. She selects the menus, does the ordering, directs the preparation of the food, supervises the delivery and maintains the records including the inventories in all of her modified schools. She is required to make periodic visits to her assigned schools.

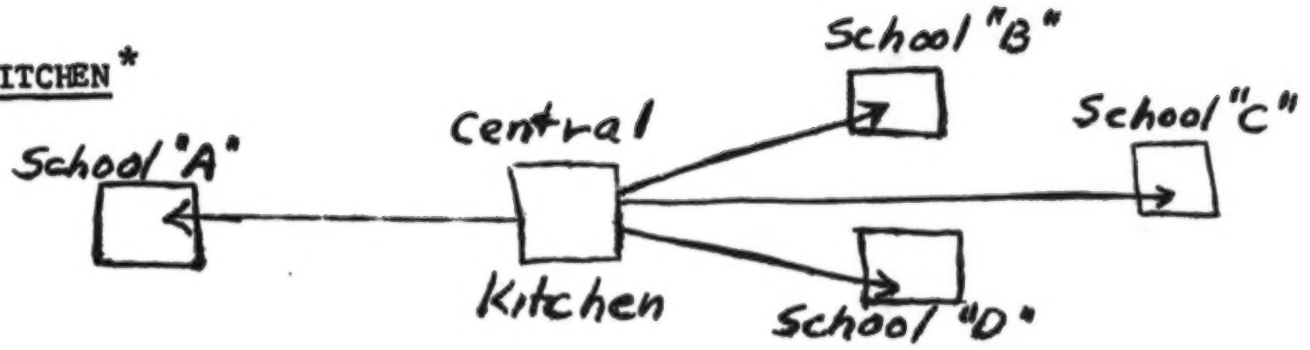
The "home school" generally takes care of two to three schools within a small geographic area. The food is transported in electric food carts. This operation is not to be confused with the large central kitchen system as one would find in Norwalk, California.

This type of a program has been in operation in the San Diego City Schools for the last five years. At the present time, there are 28 home schools and 43 modified programs.

Advocates of this system claim that this program maintains the personal touch and the home-cooked quality of food, thus insuring nutritious, attractive and palatable food at a reasonable cost to the student.

* See Exhibit "A"

CENTRAL KITCHEN *



Under this system, the central kitchen is the main food preparation center with sub-kitchens and feeding stations in satellite schools. The central kitchen in Costa Mesa Union School District in California prepares between 3,00 to 3,500 meals for seven schools a day, whereas other central kitchens can prepare 10,000 meals a day as they do in some school districts in the state of Washington. The central kitchen at Norwalk School District in California prepares over 10,000 meals and transports them to twenty-nine schools.

"Centralized kitchens save school money," says Business Manager Al Prentice of Glendora School District of Glendora, California. He figures that "the central kitchen operation and transporting the food has saved the district $20,200 in capital outlay and $8,000 per year in wages. He reports that installation of equipment in individual kitchens at the four other schools would have cost $25,000, in contrast to the $10,000 required to outfit the central kitchen. This means a $15,000 saving on kitchen equipment. Then he deducts $4,000 as the cost of the truck and $2,500 for the food carts, a net saving of $8,500.

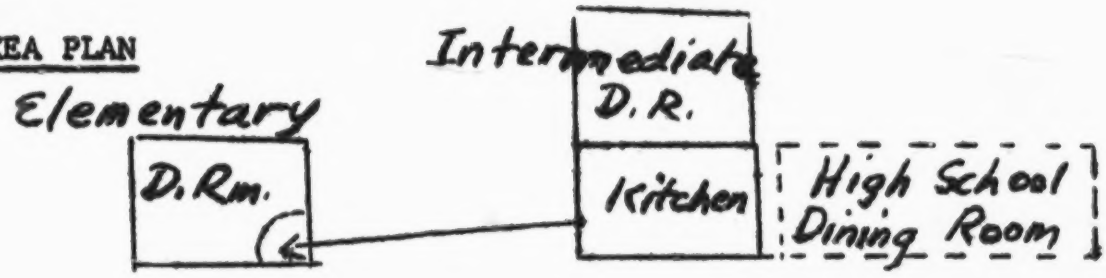
"To build four more kitchens would have upped building costs an estimated $2,925 per kitchen, or $11,700. Added to $8,588, this makes $20,200.

"The business office estimates that manning individual kitchens in each school would increase the district cafeteria staff by one at each of the four schools served by carts. At $50 a week for 40 weeks, this would mean $2,000 more at each school, a total of $8,000."

* See Exhibit "B". This article, "arguments for central kitchens and arguments for individual kitchens," was one of the most widely quoted articles on central kitchens in 1955 and for several subsequent years.

Many leaders of the school lunch program were doubtful of the central kitchen concept when the program was first launched. However, with the experience gained in using the central kitchen efficiently and with the advent of the portable electric food carts, the new plan is slowly but surely gaining increasing acceptance.

THE WAIAKEA PLAN



The Waiakea cafeteria plan of the Department of Education is presently under construction at Waiakea Intermediate School in Hilo, Hawaii. This plan is a combination of the traditional and the central kitchen concepts. The kitchen has been designed to serve at capacity approximately 3,000 students in three schools, namely, the elementary, the intermediate and the high.

The decision to initiate this program resulted from preliminary studies which gave sufficient evidence that savings could be made in construction of facilities. The fact that the three schools were in one school complex also made the situation a natural to implement the new concept.

Basically, these were the preliminary studies. The plan and program of the traditional cafeterias would have included the following at maximum operation:

	Facility		Adult Workers			
	Cafetorium	Equipment	Mgr.	Cook	Helpers	Student Helpers
Elementary	$140,000	$10,000	1	-	2	8
Intermediate	160,000	12,000	1	1	3	12
High	190,000	12,000	1	1	4	12
Total	$490,000	$34,000	3	2	9	32

The modified plan proposes the following:

	Facility			Adult Workers			Student Helpers	
	Kitchen	Multi-Purpose Bldg.	Equipment	Mgr.	Cook	Helpers	Regular	P.T.
Elementary (Serving area)	$5,000	$ 80,000	$600 (Food cart)		(P.T.*)			5*
Intermediate	65,000	95,000	20,000	1	2	8	6	4**
High		120,000					6	6**
Total	$70,000	$295,000	$20,600	1	2	8	12	15

Facility wise, the modified plan proposes to effectuate savings in the neighborhood of $125,000. Savings amounting to approximately $13,000 can be anticipated by not installing major cafeteria equipment in two other kitchens. Further savings can be anticipated by not requiring two cafeteria managers. The probability of using less student help is also an attractive feature of the modified plan.

The Educational Facilities Laboratories, Inc., assisted in the study and the planning of the new kitchen-dining complex at Waiakea Intermediate School.

* Two adult workers from the main kitchen will go to the elementary school to serve the food. Five students will assist in the serving of lunches.

** Additional intermediate and high school students may be necessary to help in the main kitchen during the lunch hour.

PROBLEM OF FOOD POISONING

A few years ago, the Los Angeles County Health Department was concerned over the fact that many times the temperature in the food cart did not meet the prescribed degrees. This, they claimed, created conditions conducive to the growth of organism which produced food poisoning.

Locally, our cafeteria leaders have been greatly concerned whenever food was transported from the main kitchen to annexes. There was justifiable concern inasmuch as the food was transported in aluminum pots in the cafeteria manager's car or in a custodian's "pick-up" truck. This certainly violated rules of sanitation. Futhermore, the aluminum pots did not maintain the prescribed temperature of keeping food hot and free from creating conditions conducive to staphylococci growth.

Today, the advocates of the central kitchen concept claim that the probability of food poisoning has been greatly reduced by the use of electric food carts which can maintain temperature well over the 140 degrees required to kill "staphylococci" (food poisoning bacteria) as recommended by Dr. G.M. Dack, Director of Food Research Institute, University of Chicago.

The problem of staphylococci poisoning can be further reduced by strict compliance with and the daily practices of:

1. High standards of personal hygiene and sanitation by all food handlers.

2. Excluding all those suffering from colds or sore throats or those with lesions and other illness in the preparation of food.

3. Keeping hot foods to the prescribed temperature.

THE PORTABLE ELECTRIC FOOD CART

The portable electric food carts transport both hot and cold food at the prescribed temperature to schools several miles away from the central preparation plant. The electric food carts are preheated to the prescribed temperature before the food is loaded into them. The carts are then transported in specially designed trucks capable of holding six to seven carts. Immediately upon arrival at the feeding stations, they are plugged into outlets so that the hot food can be kept well above the required 150 degrees for maximum sanitation.

The food carts do double duty by serving as serving counters which makes possible some savings in construction costs.

The portable electric hot and cold food carts are the lifelines for central kitchen operations.

THREE DISCERNIBLE TRENDS IN THE SCHOOL LUNCH PROGRAM

Today, the School Lunch Program has been widely accepted as an important part of the total school program. There is increase evidence that the food and other matters related to the School Lunch Program of tomorrow will be vastly different from the one that we know of today.

Richard Flambert, food service consultant of San Francisco, recently stated that, "The future belongs to frozen foods and within a short period of time, many meals will be prepared and frozen and used when convenient." His statement might predict the possibility of foreseeing an operation where a central kitchen will be operating 24 hours a day assembling meals and placing them into carts which could be placed in storage depots to await delivery to schools.

Although not a school lunch program, Pan American Airlines has already begun preparing food items in New York and flying them frozen to Honolulu for use on its transpacific flights. The airline has been quoted as saying, "The new procedure upgrades the quality of food."

Should Hawaii's schools adopt the frozen food program will be the subject of many debates. In the meantime, it would be advisable for the Department's leaders in the school lunch program keep themselves informed of the newer innovations which give promise in guaranteeing efficiency in operation and assuring the high quality and palatability of food.

The second noticeable trend is in the effort to speed up the serving of food to students. This improvement is long overdue. Attempts are already being made so that students can get their food quickly without standing long periods in the lunch line. Thus, they will be able to spend more time, leisurely, eating their food. Such plans as decentralized dining areas,

several feeding stations and a radically new innovation, the "scramble system," hope to accomplish the speeding up process of feeding students.

Although a number of schools in Hawaii have adopted the modified decentralized feeding stations, they have not been too successful. Further research and study, in light of newer trends and the widespread use of electric food carts as it is done on the mainland, might substantially improve Hawaii's systems.

The third major trend is in the gradual elimination of student help in the kitchen. Even though this program has been recognized by many as having valid educational value, the discontinuance of student help is recommended.

This can be accomplished in Hawaii, many claim, by increased legislative appropriations for the cafeteria program and/or by raising the lunch price to get additional revenue to hire the required adult help. Possibly, the incorporation of newer concepts of food preparation and delivery as those found in a number of school districts on the mainland might increase the efficiency of operation thereby gradually reducing the number of students needed in the kitchen.

Any effort that will tend to eliminate student help in the cafeteria will be hailed as a major step forward in the school lunch program, especially by students and parents here in the 50th State.

SUMMARY AND RECOMMENDATIONS

The school lunch program of the Department of Education has been rated as one of the better school lunch programs in the United States. This high rating has come about because of:

1. Good leadership over the years by the leaders of the school lunch program.
2. Good cafeteria personnel on the school level.
3. High percentage of participation in the lunch program by students and teachers.
4. Favorable acceptance and support of the lunch program by parents.
5. Good kitchen facilities, and
6. Federal help through the National School Lunch Act of 1946.

In spite of the Department of Education's high rating, the people charged with the responsibility of maintaining a good school lunch program must continually try to:

1. Improve the quality of meals.
2. Keep up with technological advancements in food preparations.
3. Keep up with the newer kitchen equipment and know which are best suited to do the job efficiently and economically.
4. Investigate ways of reducing operational costs.
5. Assist architects and facility planners in improving kitchen facilities so they reflect maximum use of space.

The recommendations which follow are rather limited in scope, nevertheless, they are submitted with the hope that they will accomplish these objectives:

1. Implement some of the newer concepts of the school lunch program which are receiving favorable acceptance in many school districts on the mainland.

2. Improve the "modus operandi" in our cafeteria, and

3. Effectuate economies in construction, in kitchen equipment and in operation.

RECOMMENDATIONS:

1. Program a central kitchen in the Hawaii Kai or in the Harbor Heights or in any other large new development. The central kitchen to serve not more than seven to eight schools and the farthest distance of a school from the central kitchen not to exceed four miles. (See Proposal A)

2. Recommend, for the present at least, that no change take place in existing kitchens, even though recommendations with considerable merit to change present operations have been made by conscientious and dedicated school people. (See Exhibit "C")

3. Recommend no major renovation of existing kitchen facilities until the appointment of the new Cafeteria Director. The Director must be given an opportunity to study the total cafeteria operations.

4. Establish a priority of cafeteria replacements. Funds for this replacement program must be included in the C.I.P. Budget.

5. Consider, eventually, a central kitchen operation for schools in close proximity when a modernization program becomes necessary because of outmoded kitchen facilities and equipment. (See Proposal B)

6. Recommend no central kitchen operation for schools that are too widely scattered or on a state-wide basis.

7. Initiate central purchasing of food, especially for schools in close proximity. Such a practice will bound to result in economies.

8. Initiate purchasing, especially of non-perishable food items, on bid basis, because this practice too will result in substantial savings.

9. Experiment with frozen foods in selected schools and compare the quality and palatability with daily cooked food.

10. Use portable, electric food carts whenever food is transported any distance from the kitchen.

11. Initiate a program of action to gradually reduce and eventually eliminate student help in the cafeteria. Additional appropriations will be required to implement this recommendation, therefore, the necessary funds should be reflected in the Department's cafeteria operational budget.

12. Review most carefully the present kitchen specifications and size requirements. The study to be made by a local committee composed of representatives of the Department of Education, Building Department of the City and County of Honolulu, the P.T.A. and Cafeteria Managers Association.

13. Initiate a time-motion and time-use studies of existing kitchens. This study should be made by qualified persons to conduct such a study.

"NOTHING VENTURED - NOTHING GAINED"

Will the implementation of the aforementioned recommendations improve our present system? Will they prove better than what we replace? It will be difficult to determine the success or failure of any recommendation beforehand. It must be put into action for validation, but this involves risks. "If your risks are high," said Bernard F. Gimbel, Chairman of the Board, Gimbel Brothers, Incorporated, "so are your rewards."

# # # # #

CENTRAL KITCHEN OPERATION IN HAWAII KAI

CENTRAL KITCHEN PROGRAM

Facilities and Major Kitchen Equipment

School	Distance from C.K.	Enrollment	No. Participating	Facilities	Food Cart & Truck	Other Equip.	Total
Elementary A (Hahaione)	2.5 mi.	900	800	$85,000 (M-P)	$1,200	$4,000	$90,200
Elementary B (Kamiloiki)	.9	900	800	85,000 (M-P)	1,200	4,000	90,200
Elementary C (Kalama)	1.2	900	800	85,000 (M-P)	1,200	4,000	90,200
Elementary D (Mauuwai)	1.6	900	800	85,000 (M-P)	1,200	4,000	90,200
Elementary E (Lunalilo Road)	.2	900	800	85,000 (M-P)	1,200	4,000	90,200
Intermediate (Kamiloiki)	.8	1,200	1,000	95,000 (M-P)	1,800	4,000	100,800
High	--	2,400	2,000	225,000 (Kitchen & M-P)	7,200	25,000	257,200
Totals		8,100	7,000	$745,000	$15,000	$45,000	$805,000

INDIVIDUAL KITCHENS

Elementary A	$150,000	$10,000	$160,000
Elementary B	150,000	10,000	160,000
Elementary C	150,000	10,000	160,000
Elementary D	150,000	10,000	160,000
Elementary E	150,000	10,000	160,000
Intermediate	170,000	12,000	182,000
High	225,000	12,000	237,000
Totals	$1,145,000	$74,000	$1,219,000

In facilities and major cafeteria equipment, "paper" savings of approximately $414,000 might be possible if a central kitchen operation were implemented for schools in Hawaii Kai.

The above programs do not reflect the number of cafeteria personnel and student help required to operate under each system.

PROPOSAL "B"

SUGGESTED MODERNIZATION PROGRAM FOR SIX KALIHI SCHOOLS

When a modernization program of outmoded cafeteria facilities and cafeteria equipment becomes necessary in six Kalihi Schools of rather close proximity, a central kitchen concept might prove to be economical, facilitity and equipment wise.

SET UP UNDER TRADITIONAL PLAN

(Data - 1960-1961 School Year)

School	Enrollment	Av. no lunches	Adult Workers Mgr.	Cook	Helpers	Students	Grades	Hours
Kapalama	1040	978	1	1	4	12	4-6	10:00 - 1:00
Kalihi-uka	521	420	1		1	8	4-6	8:30 - 1:00
Fern	775	633	1		2	8	5-6	8:30 - 1:00
Kalihi-waena	1000	900	1	1	2	12	4-6	8:30 - 1:30
Kalihi-kai	1291	1090	1	1	4	13	4-6	8:30 - 1:30
Puuhale	681	612	1		2	8	4-6	8:30 - 1:30
Totals	5308	4633	6	3	16	61		

CENTRAL KITCHEN

(Kapalama School recommended for the Central Kitchen site)

School	Distance from Kapalama	Facility	Food Cart & Truck	Other Equip.	Adult Workers Mgr.	Cook	Helpers	Students
Kapalama	---	$200,000	$7,200	$22,000	1	3	16	6***
Kalihi-uka	1.1 mi.	85,000	600	4,000			P.T.*	6
Fern	1.4	85,000	1,200	4,000			P.T.*	6
Puuhale	1.5	85,000	1,200	4,000			P.T.*	6
Kalihi-waena	.8	85,000	1,800	4,000			P.T.**	6
Kalihi-uka	1.0	85,000	1,800	4,000			P.T.**	6
Totals		$625,000	$13,800	$42,000	1	3	16	36

If it were possible to construct cafeterias and provide them with major kitchen equipment at the present cost of approximately $160,000 each, the total modernization cost would be approximately $960,000. If this amount is fairly accurate, the central kitchen concept might save approximately $270,000.

* Two cafeteria helpers would go to Kalihi-uka, Fern, and Puuhale to serve the food and wash the dishes.

** One cook and two helpers would go to Kalihi-waena and Kalihi-uka to serve the meals and wash the dishes.

*** Six students (more if necessary) would go to the auxiliary kitchen to help serve the meals and assist in clean-up work. Time spent should not exceed two hours daily.

C O P Y

Exhibit "A"

SUPERINTENDENT'S BULLETIN
San Diego City Schools
San Diego, California

Vol. XXXV Friday, March 17, 1961 No. 25

MODIFIED FOOD SERVICE

For the last five years the district has been operating "modified food service" which is a type of centralized feeding. This program is in schools where cafeteria income does not equal the necessary expenditures--for food, salaries, supplies, utilities, central office expense and salaries, storage charges, coin counting, compensation insurance, repair and replacement of equipment.

The modified program utilizes the existing complete kitchens for the entire preparation of the food which is then transported to subsidiary units that otherwise would have to be closed.

Since 1959, district policy has been to provide food service areas only in new schools constructed when full kitchen facilities are readily available elsewhere. This program releases substantial amounts of money for classroom construction, from savings achieved through the reduction of kitchen space and equipment costs. Decreased operating costs also result. Planning is under way for a modified secondary feeding program, to start with the servicing of the new Taft Junior High School from Kearny High School.

It should be noted that while no further independent kitchens in elementary schools are contemplated in all new schools, it is hoped to reactivate many of the existing complete kitchens--presently on modified curtailed programs--to serve as home schools for feeding newly constructed schools.

Modification of school cafeterias has become the solution to the problem of providing a standard, well-balanced, hot lunch to the children and faculty of any school, regardless of size or location. It does not necessarily curtail or decrease the quality or service of food to participating schools.

These modified programs receive particular attention because of the necessity to transport the food in perfect condition. Sanitation practices, packing procedures, restrictions on use of leftover foods and types of food to be sent--all approved by county health authorities--are rigidly enforced.

The manager of the "home school" is directly responsible for all of her subsidiaries. She selects the menus, does the ordering, assists in the preparation and packing, and maintains the records including the inventories in all of her modified schools. She is required to make periodic visits to her assigned schools, where she contacts the principals for assistance or suggestions for improvement.

Supervision is given to schools, both home and modified, by the central staff assigned. At present one supervisor and one operations specialist are assisting in the smooth functioning of 28 home schools and 43 modified programs.

The managers of home schools, along with all cafeteria managers and personnel, have a great responsibility. A study is under way to find what reclassification change may be necessary because of these new responsibilities.

Centralized service from one or two large kitchens is not believed practical because of the prohibitive cost of equipment and construction. The widespread locations of the various schools would make the transportation of prepared food too difficult to insure its arrival in perfect condition.

It stands to reason, in the same light, that maintaining the personal touch and home-cooked quality so stressed by the Cafeteria Department would be impossible in large quantity preparation. In the present program the existing kitchens and equipment, already provided by the district, are being used very efficiently to provide the most nutritious, attractive and palatable food possible at a reasonable cost to the student.

DOROTHY V. HART, Director of Cafeterias

COPY

Exhibit "B"

SCHOOL LUNCH NEWS
CALIFORNIA STATE DEPARTMENT OF EDUCATION
December-January
1954-1955

WHAT ABOUT CENTRAL KITCHENS?

In order to provide school lunch services and at the same time conserve funds for classrooms and other important facilities and services, a number of school districts have established central kitchens. Under this type of plan food is prepared and served in the school at which the central kitchen is located and food is transported to one or more additional schools. It is the purpose of this article to evaluate the strengths and limitations of such a plan.

Arguments for Central Kitchens -- The advocates of central kitchens base their arguments on the following points:

1. Central kitchens result in capital outlay savings because space and equipment requirements in the outlying schools are reduced.

2. Operating costs are reduced because of labor savings.

3. A more uniform product can be provided throughout the district because food is prepared in one or a limited number of kitchens.

4. Control of food supplies is improved when food storage and preparation is centralized in a limited number of locations.

5. The problems of securing and training personnel are reduced proportionately with the reduction of food preparation centers.

Arguments for Individual Kitchens -- The advocates of individual kitchen operations present the following arguments:

1. Capital outlay savings in central kitchen operations are not as great as imagined because:

   a. Dishwashing facilities usually are provided in the individual units in order to insure proper sanitation.
   b. A small range and refrigerator are usually provided in the individual units for use by community groups.
   c. Dining areas in the outlying schools are usually provided.
   d. Specially equipped trucks and insulated food carts are necessary for food transportation.

2. Central kitchens do not reduce operating costs appreciably because:

   a. Employees are necessary in the outlying school to receive and serve the food, receive direct deliveries of bread, milk and other foods, and to scrape, wash and store dishes and utensils.
   b. Some preparation usually is carried on in the individual units, such as spreading butter on bread and the final preparation of certain dishes.
   c. Transportation costs to and from the individual units must be considered as well as the time required for loading the food carts.

3. A good school lunch supervisor provides an in-service training program for school lunch employees in order to maintain high standards of food preparation and service. She also provides standardized recipes in order to achieve uniformly good food products. A good supervisor will develop tools and techniques for food and cost control.

4. A better product results when food is served immediately after it is prepared. Food is more attractive and tasty, thus providing more eye-appeal and encouraging better food acceptance by pupils.

5. Menus can be more varied in individual kitchen operations and variety in the menu is most important from the standpoint of pupil participation and food acceptance.

6. Food should be served immediately after it is prepared in order to maintain optimum nutritional values. This usually is not possible in central kitchen operations.

7. The individual kitchen operation permits greater flexibility in making adjustments whenever participation exceeds that anticipated on any given day. Such flexibility is not possible under a central kitchen operation and occasionally some children must be refused food or the servings to all must be reduced in order to take care of increased, unanticipated participation.

8. There is a tendency on the part of administrators and teachers to take a greater interest in the school lunch program when complete food preparation and service are carried on within the school.

Conclusion

In order to provide food service in schools where no kitchen facilities exist, it is necessary to transport food from a central kitchen. Also, there may be justification for transporting food to a school in which a relatively small number of children participate in the lunch program. However, it is not possible to make a generalized recommendation either for or against central kitchens until such time as more valid cost data are available. In the meantime, it is suggested that those planning to establish or expand food service facilities:

1. Study the arguments listed above.

2. Visit both central kitchen and individual unit operations and discuss the problems with responsible persons.

3. Provide for flexibility in order to meet changing conditions in future years. As a district expands its food service operation to include additional schools it may be better in the long run to plan facilities at each school capable of eventually permitting individual operating units. Until such time as pupil participation, funds for capital outlay and the availability of qualified personnel justify food preparation in each unit, food might be transported to the individual schools from one or more preparation centers.

C O P Y

Exhibit "C"

RECOMMENDATIONS FOR A CENTRAL KITCHEN OPERATION IN PALOLO VALLEY SCHOOLS

The principals of the four public schools in Palolo Valley met a few days ago and agreed to request that they be permitted to experiment with a centralized school lunch preparation program. The schools involved are Aliiolani, Anuenue, Jarrett, and Palolo, all within a radius of a few miles. This program was suggested about five years ago, when Jarrett Intermediate was under construction and the idea was to construct the kitchen in this school in such a manner to facilitate such a program. However, we were not able to convince the department at that time.

We four principals feel that it is a waste (financially and otherwise) to maintain four kitchens, all preparing about the same type of food.

Briefly, the program would be like this:

1. All school lunches and mid-morning snacks would be prepared in the modern kitchen at Jarrett Intermediate School.

2. All adult cafeteria helpers from the three neighbor schools would be stationed at Jarrett kitchen. It would thus free schools (including Jarrett) of ever using student help in the kitchen.

3. Specially constructed food containers, capable of being electrically heated would deliver food to the neighbor schools. Delivery would be made in a conventional panel truck, to be stationed at Jarrett, when not in use.

4. At lunch time, adult helpers would go along with the food, to do all the serving, etc.

5. Money would be collected and accounted for by a person assigned for this purpose (this is in compliance with C&C regulation).

6. All soiled dishes, etc. would be returned to Jarrett in special containers, for washing, etc.

The advantages as we see them:

1. No need to send students into kitchen to do food preparation work.

2. Tremendous financial savings, all around:

   a. Elimination of three cafeteria managerial positions.

   b. Elimination of operational costs at three large schools (water, electricity, gas, etc.).

   c. Elimination of waste.

   d. Economy due to mass food purchasing and preparation.

Special stipulations:

To effectively carry out this program, there is a need for the following:

1. We are to be provided with a panel delivery truck.

2. Three specially constructed food containers, capable of being electrically heated.

3. Construction of special "ramps" in school kitchens not already provided with (Anuenue and Aliiolani Schools) to facilitate delivery of food containers (on wheels).

Some problems as we see them:

1. Problem of storage of unprepared food. Jarrett storage may be inadequate for this purpose. It is possible that the modern storage facilities at Palolo School may have to be used.

2. Washing unit at Jarrett may be inadequate to handle washing. For awhile it might be possible to handle the washing, but eventually, a second and possibly a third may have to be installed. (This is no problem, as if the experiment proves successful, it is a matter of removing the dish-washing facilities in the neighbor schools and installing them at Jarrett).

3. Elimination of three cafeteria managerial positions may create hardship on the three persons concerned.

In actual operation, the program would work in this manner:

1. Jarrett Intermediate kitchen would be provided with a cafeteria manager (responsible for the total program), assisted by an assistant cafeteria manager (she may handle clerical/accounting work as well). Full-time cafeteria employees at Aliiolani (5), Palolo (4), Anuenue (2), and Jarrett (4) would do all kitchen work (total, 15 adult workers).

2. At scheduled hours, hot food would be put into specially heated units and delivered to the neighbor schools in the school truck. Food must be kept hot electrically at the individual school dining rooms, until ready for serving. Each school dining room would also maintain a refrigerator unit to hold cold food until ready for serving.

3. After food is served, soiled plates, etc. are put into special containers and returned to Jarrett for processing.

We four principals feel that this program is worth experimenting.... We would be happy to meet with any group to further elaborate on the program.

ACKNOWLEDGMENTS

To Educational Facilities Laboratories for providing funds to make this study possible and to the many individuals who assisted in the study and supplying valuable information relating to the School Lunch Program, grateful acknowledgments are hereby expressed. Our special thanks go to the North Hagerstown High School, Laboratory School, University of Chicago, Norwalk Central Kitchen, San Diego City Schools, Kamehameha Schools, Mr. Herbert Morlin, Supervisor of Pan American Flight Kitchen, Miss Maria Rener, Manager of Central Kitchen at Norwalk, Mrs. Dorothy Hart, Director and Miss Ella Bodal, Supervisor of Cafeteria Services and to Mrs. Helen McGill and her staff.